

SPECIFICATIONTITLE: PET IDENTIFICATION SYSTEM AND METHODBACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a method and system for identifying animals and more particularly relates to a method for identifying pets such as dogs using noseprint identification.

2. Background Information

There are a number of reasons why it is important to provide identification of pets. One important reason is to identify a pet so that it can be returned to its owner if lost. Another purpose would be to certify the identity of a pet before or after competition such as horse racing or dog shows. Another important use for identification would be for forensics to determine the identity and ownership of an animal involved in property damage or personal injury.

Presently there are systems for identifying animals by applying a permanent mark on animals. Branding of cows, sheep, etc. is still widely used. Also identification tags can be attached to the animal's ears, nose, or attached to a collar worn on the neck of an animal. Another method is the use of an ink code of lettering, letters, numbers, or other symbols that can be tattooed on the skin of an animal. Also, the insertion

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1 of a readable (MICRO) chip into the body of a dog or animal can
2 be used. The microchip uses numbers only, which can identify
3 the owner of the dog via a database. The disadvantages of these
4 systems are that chips can be removed, as can tags and collars.
5 Tattoos can also be altered. It has been known that chips used
6 at animal shelters can create mistakes with ownership, by lack
7 of follow-through by shelter personnel to change ownership
8 records when necessary.

9 It was recognized that pore and crease patterns on the
10 noses of dogs are unique and can be utilized for forensic
11 identification as fingerprints are used for positive
12 identification of people. A dog's noseprint for example can be
13 used for positive identification which is acceptable for
14 registration and identification of purebred dogs by kennel
15 clubs, specifically the Canadian Kennel Club, and recognized by
16 the Canadian Agricultural Department since 1938. The Canadian
17 Kennel Club sold a kit that consisted of a pre-inked noseprint
18 pad with a paper form for registration. The ink was a viscous,
19 organic, stamp-pad type of ink that was applied to the nose of
20 the animal or dog. The ink remains solvent which was irritating
21 to the animal and to the dog owner as well.

22 To use this system the surface of the pet's or dog's nose
23 was first dried with a clean cloth to remove excess moisture.
24 The pre-inked plate is then applied to the front and sides of
25 the dog's nose with a rolling motion. The noseprint pad was

1 slightly flexible to confirm to the curvature of a dog's nose.
2 Once the rolling motion was applied to the dog's nose with the
3 flexible ink pad, it was pulled away with a quick motion to
4 avoid smudging the noseprint. The print was then transferred
5 from the inked nose to the paper registration form which was
6 allowed to dry. This method is very difficult to make
7 acceptable prints, even for persons experienced with this type
8 of ink product. The print must be complete, legible, not
9 smeared or smudged, of the correct density, not too light or too
10 dark. Non-acceptable prints can be caused by too much moisture
11 on the pet's or dog's nose, too little or too much ink, or by
12 incorrect or inconsistent hand pressure. For these reasons this
13 method was found to be tedious and not very successful.
14 Although the Canadian Kennel Club registered tens of thousands
15 of purebreds using the conventional ink product, too many of the
16 dog owners were turned down because poor quality nose prints
17 were taken which could not be identifiable.

18 There are a number of patents that disclose inkless
19 fingerprinting system that use water-based inks in a two part
20 system to develop fingerprints on a substrate impregnator with a
21 coated layer containing a developer for the other part of the
22 system. For example the patent of Meadows et al., U.S. Patent
23 Nos. 4,379,178 and 4,699,077. Other patents include U.S. Patent
24 No. 4,029,012 of Smith et al; U.S. Patent No. 4,705,299 of
25 Hedgecoth et al; U.S. Patent No. 5,363,453 of Gagne et al; U.S.

1 Patent No. 5,522,623 of Soules et al; U.S. Patent No. 5,879,453
2 of Streeter et al; U.S. Patent No. 5,673,647 of Pratt; and U.S.
3 Patent No. 5,928,708 of Hansmire et al.

4 BRIEF DESCRIPTION OF THE INVENTION

5 The purpose of the present invention is to provide a good
6 system and method for identifying animals and more particularly
7 a system for identifying pets such as dogs. An object of the
8 invention is to help an owner locate and identify a lost dog or
9 identify the owner of a dog that has strayed.

10 The system involves acquisition or capturing of a noseprint
11 of the pet or dog, entering data related to the dog and its
12 owner into a program that automatically assigns an
13 identification characteristic and storing that information for
14 retrieval on demand. The information is useful to not only
15 identify a particular pet or dog but can be used to assist in
16 finding a lost animal or pet or certifying a show animal or used
17 for positive identification at any time, as is done with an
18 individual's fingerprints used for personal positive
19 identification. Each dog's nose is unique to itself because it
20 has been proven that no two dog's noses are the same.

21 The system disclosed is an improved method for identifying
22 animals by means of a noseprint. The noseprint is readily
23 acquired without the need to apply pressure or inkpads to the
24 nose which eliminates incidents of smudged noseprints. The
25 absence of pressure also eliminates variation in density from

1 noseprints. The system of the invention uses materials that are
2 non-irritating to the animal's nose. One such method of
3 acquiring the noseprint is by close-up photograph. The close-up
4 photograph is acquired by using a high-magnification camera such
5 as a Polaroid Micro 5 SLR at up to 5X magnification. This
6 camera allows very close focusing for perfect noseprint every
7 time they are photographed.

8 Today's digital cameras can be used but it is more
9 difficult to obtain a nose image with them than it is with the
10 Polaroid camera mentioned above because the person seeking a
11 properly focused noseprint with a digital camera, as well as all
12 35mm cameras and camcorders, must follow instructions perfectly.
13 Because the skill of the dog owner taking the photo of the dog's
14 nose is limited and not mechanically controlled, a high chance
15 of error is prevalent. Using the Polaroid Micro-5 SLR is
16 mechanical because the camera shows two beams of light. When
17 the person taking the photo moves closer to the dog's nose, the
18 two beams start coming together into a single beam. When this
19 happens the camera is in perfect focus and after actuating the
20 shutter, in 60 seconds you get a perfect image of the dog's
21 nose. Done right, it's 100% effective.

22 Another method to be used is a pre-inked special type of
23 plastic material inked on one side of the flexible plastic
24 incorporated into a small frame which can fit into the palm of
25 the owner's hand, and which uses the same method as above to

1 obtain the pet's or dog's noseprint. A special registration
2 form is attached to the inked side of the hand-held disposable
3 nose printer. When rolled on the dog's nose, the ink never
4 touches the pet's or dog's nose and the light pressure applied
5 puts the dog's noseprint on the registration form quite
6 definitively and cleanly, obtaining a clear noseprint. This
7 method is quite successful and acceptable and eliminates
8 variations of specific problems, besides being non-aggressive
9 and non-irritating to the animal's nose. Noseprints using this
10 method seem to be quite successful and the users of this product
11 should feel very confident in obtaining good, readable
12 noseprints by following proper instructions.

13 Another method of obtaining noseprints for a degree of
14 success utilizes a two-part aqueous-based (inkless) system to
15 form an image of an animal's nose. One part of the system
16 contains a color forming compound which is impregnated into a
17 deposit on a layer on an identifying record card or sheet of
18 paper. The second part of the system comprise aqueous solution
19 of material which reacts with the compound to form a dark color,
20 preferably black. The material is dissolved in the aqueous
21 solution. The solution is preferably impregnated into a
22 flexible towelette. The towelette is soft and damp permitting a
23 general application of a thin film of solution on the surface of
24 the pet's or dog's nose. The registration form is impregnated
25 with developing solution so when the towelette forming compound

1 is wiped on the dog's nose and then pressed against the
2 impregnated registration form, a black impression of the dog's
3 nose appears and dries almost instantly, which then becomes a
4 permanent print which can be used for positive identification
5 for the life of the dog.

6 After capturing the noseprint image by close-up
7 photography, an inkless method or an inking method, the image is
8 digitized by being scanned into a computer. Data is also input
9 into the computer including but not limited to a photograph of
10 the pet, details of the pet owner as well as a description of
11 the pet. The capturing of the image and input of data can be at
12 numerous locations such as pet stores and the like. Each pet
13 store optionally collects and transmits the data with the
14 noseprint image and a photograph of the dog through the Internet
15 to a central receiving office for storage in a database.

16 Each pet store or shop is assigned an identification number
17 that includes the identification assigned to the particular
18 location as well as the ID assigned to the pet. For example, it
19 could consist of a series of numbers and a letter with certain
20 numbers and letters identifying the location where the data was
21 collected and the remaining portion of the ID identifying the
22 particular pet. The pet shop or store has the option of
23 retaining the information or transmitting the data to the
24 central receiving office and then deleting the information after
25 confirmation of receipt.

1 The system includes a program for image processing and
2 produce plastic collar tags containing other animal
3 identification information such as the dog's name, kennel club,
4 registration number, weight, color of fur, color of eye, and
5 owner identification such as name, address, and phone number.
6 An ID card or badge can also be produced for attachment to the
7 dog as a collar tag with an ID card produced for the owner with
8 photograph of dog and a photograph of dog's noseprint directly
9 onto the ID card.

10 The central receiving office stores the noseprint image,
11 photograph, and other data relating to the dog including
12 identifying information as well as owner information. The
13 central office includes programs to enhance the image stored in
14 the database as well as a printer to print ID cards and pet
15 collar tags which are then sent to the pet owner with a thank-
16 you letter, and other pertinent animal information such as lost
17 pet application.

18 The central receiving office assists in identifying a
19 particular pet or dog that is lost or needs to be certified for
20 purposes of a show. In this situation, the pet owner would
21 submit a form with information including data from the ID
22 identifying the pet. The central receiving office would then
23 transmit either through the Internet or by mail or fax the data
24 and photographs to shelters, veterinarians, and pet shops in the
25 geographical area of the owner where the dog nose program was

1 purchased originally.

2 Identification of any pet found would be enabled by
3 obtaining the identification number if the animal has a collar
4 ID tag. If not available, they will get a description of the
5 dog and attempt to locate the pet in the central office
6 database. If the animal has an ID tag, it is quickly located
7 and the owner notified to retrieve the pet.

8 The system also includes a method of identifying an animal
9 to reunite a lost pet with the owner or allow an owner to
10 identify a found pet. For example, a shelter can send a stray
11 dog's noseprint to the central headquarters to track down an
12 owner. Conversely, if an owner has an identification card with
13 an image of the pet's nose it can be used to provide a noseprint
14 for comparison with noseprints in the database in a search for
15 a lost dog. An image processing program that includes pattern
16 recognition at the central office compares the noseprint of the
17 dog found to noseprints in the central office database or a
18 look-alike dog where a noseprint could be taken and sent to
19 central office for comparison of two noseprints to identify the
20 database animal. Twelve to twenty-five points of identical
21 characteristics in noseprint comparison is generally considered
22 sufficient to indicate a match and identify the dog. If they
23 match, they can notify the owner of a positive match. If they
24 do not match, the dog owner is advised that the pet found is not
25 his and they wait for the next animal to be found.

1 The system can also be used to positively identify an
2 animal in a dog show if his pedigree should be questioned. A
3 nose imprint can be taken and compared to noseprints in the
4 central office database by using the pattern recognition
5 software.

6 The above and other objects, advantages, and novel features
7 of the invention will be more fully understood from the
8 following detailed description and the accompanying drawings, in
9 which:

10 BRIEF DESCRIPTION OF THE DRAWINGS

11 Figure 1 is a block diagram of the overall pet
12 identification, transmission, and storage system according to
13 the invention.

14 Figure 2 illustrates a method of capturing a noseprint with
15 a close-up camera.

16 Figure 3 illustrates a stored photo-identification for
17 printing with an image processing program.

18 Figure 4 is a front elevational view of a sealed, metal
19 salt applicator providing another method of obtaining a
20 noseprint according to the invention.

21 Figure 5 is a sectional view taken at 5-5 of Figure 4.

22 Figures 6(a) through 6(f) are schematic representation of
23 the steps of obtaining a noseprint utilizing the applicator
24 illustrated in Figures 4 and 5 according to the invention.

25 Figure 7 illustrates a noseprint card produced from the

1 applicator of Figures 4 and 5.

2 Figure 8(a) through 8(c) illustrate another method of
3 acquiring a noseprint using a pre-inked flexible pad.

4 Figures 9(a) and 9(b) are a flow chart of the pet
5 registration and identification system.

6 Figure 10 is a flow diagram illustrating an owner's search
7 for a lost pet utilizing the registration and identification
8 system.

9 Figure 11 is another flow diagram illustrating the
10 identification of a pet for retrieval or certification utilizing
11 the registration and identification system.

12 Figure 12 is a flow diagram illustrating the procedure for
13 an owner claiming a found pet utilizing the registration and
14 identification system.

15 Figure 13 is a front elevational view of a noseprint
16 identification card with the rear view of said card containing
17 information similar to that shown in Figure 3 according to the
18 invention.

19 Figure 14 illustrates a pet collar tag for identifying a
20 pet utilizing the registration and identification system
21 according to the invention.

22 DETAILED DESCRIPTION OF THE INVENTION

23 An overall block diagram of the pet identification system
24 according to the invention is illustrated in Figure 1. The
25 method and system are particularly applicable to pets such as

1 dogs but can be applied to other pets. However the system will
2 be described with relation to identifying and storing
3 information relating to dogs. A dog or pet owner 10 receives a
4 subscription package either from a pet site 12 such as a shop or
5 store, or directly from pet identification central headquarters
6 14. The subscription package includes an application detailing
7 information about the dog including local veterinarians and pet
8 shelters. The dog owner 10 will then take the data and
9 information regarding the dog 16 to a pet shop, pet store 12 or
10 other location for recording the information. Another option is
11 to have a pet shop or store or other site 12 acquire a noseprint
12 and data 18 for transmission through internet 20 to pet
13 identification central headquarters 14 as indicated by the
14 dotted line 22. Preferably, the noseprint is delivered back to
15 pet owner 10 for mailing 25 to pet central headquarters 14. A
16 pet shop or store 12 may enter the data into a computer and
17 transmits the data over the internet by E-Mail to pet central
18 identification headquarters 14 for direct storage in the pet
19 database.

20 Registration can be either at pet shops or similar sites 12
21 or at pet central identification headquarters 14 and includes
22 the dog's description, noseprint, and preferably a full-body
23 photograph. A pet identification number is automatically
24 assigned either at pet shop 12 or central headquarters 14. The
25 identification is automatically generated by a program that

1 assigns an account number if the information is received from
2 pet site 12 and an identification number for the dog. All data
3 entered into the central headquarters database 14 can be
4 retrieved at any given time.

5 The dog identification, noseprint, and photograph are used
6 to generate an identification card and collar tag 24. The
7 identification card and collar 24 are then sent to the pet owner
8 10 along with a form for reporting a lost dog and various other
9 printed materials.

10 Should a dog be lost, lost pet report 26 is sent to central
11 headquarters 14 by pet owner 10. Central headquarters 14 then
12 sends out a lost pet notice 28 to veterinarians 30 and to pet
13 store 12 where the data originated and to local pet shelters 32.
14 Generally about 90% of pets are found within a few miles radius
15 of the point where they are lost so that is where the search is
16 concentrated. The lost pet notice 28 is sent to veterinarians
17 30 and pet shelters 32 and the pet store or site where the
18 purchase originated from first in the general area within a few
19 miles of the pet owner or the area where the dog was lost.

20 Optionally a noseprint 29 of any dog that is suspected of
21 being the lost dog is sent from the veterinarians 30 or shelters
22 32 back to central headquarters 14 to find the owner of the dog
23 or find a dog lost by an owner. Central headquarters then scans
24 the lost dog images 34 received from veterinarians 30 and pet
25 stores or shelters 32 comparing noseprints to database dog

1 noseprint. An image comparison is made by pattern recognition
2 program 36 to determine if there is a match. If there is an
3 image match, a notice 38 is sent to dog owner 10. If there is
4 no image match, notice 40 is sent back to the veterinarian 30,
5 pet store, or pet shelter 32 that sent the noseprint.

6 The system and method may also be used to find the owner of
7 a stray pet with or without a collar tag. Present systems have
8 no way of identifying a stray dog if the collar tag is lost.
9 However with the present system, a stray dog or pet may be
10 returned to an owner if the animal's noseprint is in the central
11 headquarters database. A noseprint of the stray dog can be sent
12 by a shelter, veterinarian, etc. to central headquarters for
13 comparison with noseprints in the database. If the noseprint is
14 in the database, the owner can be found and notified his dog has
15 been found.

16 An important feature of the invention is the method of
17 obtaining a good, accurate noseprint of the dog. It is
18 important to acquire a noseprint that is accurate; a photograph
19 in focus which can produce a very clear definitive noseprint
20 even seen with naked eyes. Previous attempts to use inking
21 methods to obtain noseprints was tedious and generally
22 unsuccessful and finally was abandoned because of its
23 inaccuracy. The improved methods of the present invention have
24 solved the problem of obtaining an accurate, reliable noseprints
25 that can be identifiable for comparison if need be.

1 One preferred method of obtaining an accurate noseprint is
2 with a closeup camera 42 as illustrated in Figure 2. A closeup
3 camera such as a Polaroid Micro 5 SLR with a 3X or 5X
4 magnification achieves an excellent in-focus photograph of the
5 dog's nose. The use of the closeup camera has resulted in
6 accurate noseprints nearly 100% of the time. To acquire a
7 noseprint, the owner holds dog's muzzle 44 and two light beams
8 46 and 48 from closeup camera 42 come together as camera 42
9 moves closer to the dog's nose. With the dog owner 44 holding
10 the dog's head steady for a second or two, an in-focus noseprint
11 can be acquired with camera 42. In approximately sixty seconds
12 a good quality photograph is developed. Another photograph of
13 the entire dog can then be taken which is then entered into the
14 computer database by scanning. A sample photograph ID card 50
15 will show the dog's picture 52 noseprint 54 and unique
16 registration number 56 in addition to the dog's name 58 as shown
17 in Figure 3.

18 Another preferred method of obtaining a good noseprint is
19 with a special pre-inked two-part flexible pad 200 as shown in
20 Figures 8(a) through 8(c). One side of flexible pad 200 has a
21 flexible plastic material 202 in a window 204 of a frame 206
22 comprising one half or side of the pad. The other half or side
23 of pad 200 is comprised of a special registration form 208
24 similar to the form 80 shown in Figure 7. Form 208 is sealed
25 around its periphery with window 202 aligned with area 84

1 (Fig. 7) of the registration form 208. Pad 200 is preferably
2 rectangular in shape and will fit comfortably in a dog owner
3 or person's hand. The interior surface of flexible plastic
4 window 202 is coated with an indelible ink 203.

5 Obtaining a noseprint is by a method similar to that shown
6 in Figures 6(a) through 6(f) described in greater detail
7 hereinafter. Since the entire pad is quite flexible, window
8 area can be rolled on a dog's nose pressing ink 203 on the
9 interior side of plastic window 202 against the pet's or dog's
10 nose forming a noseprint 86 (Fig. 7). This method is preferable
11 as ink 203 on the inside of plastic window never comes in
12 contact with the dog's nose and only a light pressure is needed
13 to create a dog's noseprint on the area 84 of the registration
14 form 208.

15 Ink 203 forms definitely and clearly a clean noseprint 86
16 as shown in Figure 7. This method is efficient and acceptable
17 and eliminates some of the previous problems with obtaining
18 clean noseprints as well as being non-aggressive and non-
19 irritating to the animal. Noseprints required using this method
20 can be quite successful and users of inking pad 200 should feel
21 very confident of obtaining a good, readable noseprint by
22 following the simple instructions.

23 Another option is to add a pleasing scent to the surface of
24 pad 200. This will encourage the dog to sniff at pad 200 easing
25 the process of taking the noseprints. The material to create

1 the scent can be incorporated in removable cover 206 or some
2 attractive scent smeared on the surface of window portion 202.

3 Another optional but less preferred method of obtaining a
4 noseprint is with an inkless system illustrated in Figures 4
5 through 7. Referring now to Figures 4 and 5, the sealed metal
6 salt applicator 60 comprises a porous pad 62 impregnated with
7 marking composition sealed within enclosure 63 that has a very
8 low moisture vapor transmission rate under normal ambient
9 storage conditions, such as from -20 degrees F to 115 degrees F.
10 The water vapor permeability as measured by ASTM D697 method is
11 below 0.5 and preferably below 0.2 grams/24 hr/mm thickness/cc
12 Hg at 25 degrees C. The enclosure is preferably formed of a
13 soft, flexible film, such as a low water vapor transmission
14 resin or a thin foil metal, such as aluminum and preferably a
15 combination thereof. A flat, edge-sealed packet as best
16 illustrated in Figure 5 is a particularly preferred form of the
17 enclosure.

18 The packet is formed of a top sheet 64 attached its four
19 edges by means of a seal 66 to a bottom sheet 68. The seal 66
20 can be formed by a wet adhesive, but is preferably formed by
21 applying a layer 70 of a thermoplastic, such as polyethylene or
22 polypropylene to the inner surfaces of a central vapor barrier
23 film 72, such as a sheet of aluminum foil, and applying heat to
24 fuse the layers 70 together. The outer surfaces of the aluminum
25 foil can contain a layer 74 of a tougher resin, such as a Nylon

1 (polyamide) or Mylar (linear polyester), to provide resistance
2 to wrinkling or cracking, and to provide a surface for
3 imprinting product name or instructions. The foil can be
4 replaced with a synthetic resin film having good vapor barrier
5 characteristics, such as polyvinylidene fluoride.

6 The porous pad 62 is a hydrophilic material which is
7 impregnated with the marking composition. The pad should not
8 have a surface capable of imprinting its pattern on a dog nose,
9 such as a sponge with pores larger than ridge separations on a
10 finger, or a stiff, textured paper. Best results are achieved
11 with stretchable, creped paper towlettes. The important
12 characteristic is the amount of solution impregnated into the
13 paper. For 5 inch by 8 inch (40 square inches) folded, paper
14 towlettes, it has been found that at an impregnation of 1.66 cc
15 of marking solution or less, the print is incomplete and light.
16 At an impregnation of 2.2 cc of marking solution or more, the
17 print smudges or smears. About 1.8 cc of liquid per 40 square
18 inches appears to be optimum.

19 The marking solution impregnated into the pad comprises a
20 solution of a water-soluble, solvent-lubricant. The solution
21 may also contain a small amount of a wetting agent or detergent.
22 The solution generally contains, on a relative basis, 20 to 100
23 parts by weight of solvent; 2 to 30 parts by weight of metal
24 salt; and optionally, 0 to 20 parts of water. A small amount of
25 detergent, such as 1 to 10 grams of Aerosol OT (74% AQ), may be

1 added. The ingredients are mixed to form a clear solution which
2 is then soaked into the pad. The solution enters the pores of
3 the paper pad.

4 The soluble metal salt reactive with the hydroxyphenolic
5 developer can be a metal from groups I to VIII of the periodic
6 table, and the anion may be inorganic, such as halide, sulfate
7 or ferrocyanide. A preferred marking ingredient, due to cost,
8 availability, nontoxicity and safety, is ferric chloride.
9 Ferric chloride may be used in a mixture with 5 to 30% of its
10 weight of ferrous chloride. The solvent for the salt is
11 preferably a liquid that does not evaporate under ambient
12 conditions, and also preferably is a lubricant to lubricate the
13 movement of the finger as it moves over the paper pad.
14 Preferred solvent-lubricants are materials, such as glycerine,
15 and alkylene glycols, such as ethylene glycol or propylene
16 glycol or various low molecular weight polyether liquids based
17 on ethylene and/or propylene oxide. A suitable example of a pad
18 soaking solution follows:

19 EXAMPLE 1

MATERIAL	AMOUNT
Glycerine	23,866 grams
$\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$	5,818 grams
$\text{FeCl}_2 \cdot 4\text{H}_2\text{O}$	763 grams
Aerosol OT	8 ml

1 The hydroxyaromatic developer compound that forms the marking
2 reaction with the metal salt is impregnated onto a substrate
3 suitably a fibrous substrate, such as a paper sheet or noseprint
4 ID card 80 shown in Figure 7 by impregnation from solution. The
5 card 80 can have a data receiving area 82. The marking solution
6 and a noseprint receiving area need only be impregnated into the
7 noseprint portion 84 of the card to form an impregnation field
8 86.

9 The metal salt is preferably a salt of a transition metal,
10 such as iron, titanium, vanadium, chromium, magnesium, cobalt,
11 nickel, copper, molybdenum, tungsten, and the like with an
12 anion, such as ferride, citrate, sulfate, nitrate, stearate,
13 acetate, formate, phosphate and the like.

14 The preferred developing ingredients are quinolinol
15 derivatives, preferably 8-hydroxy-quinoline and various
16 substitute derivatives thereof alone or in combination with a
17 polyhydroxy phenol compound, such as trihydroxy benzoic acid,
18 pyrogallol, catechol, gallic acid, propyl gallate, and the like.
19 The developing reaction should be such as to give a clear and
20 distinct image, preferably a very dark, black-colored image.
21 The impregnating composition is formed as a solution in a common
22 solvent. Solvents, such as acetone are utilizable; however, for
23 inhalation reasons and due to the tendency of acetone to
24 dissolve preprinted areas of the noseprint card, it is preferred
25 to utilize an alcohol solvent, suitably a lower alkanol, such as

methanol, ethanol or mixtures thereof. The developing composition contains, based on 100 grams of solvent, 10 to 40 parts by weight of marking compound, and 1 to 10 parts of the higher molecular weight dibasic/acid additive of the invention. The composition may also contain from 0.1 to 3 parts of a finely divided silica as a thickener. The preferred composition contains a mixture of a trihydroxybenzene, such as propyl gallate and 8-hydroxy-quinoline in a ratio of at least five to one of the gallate to hydroxy-quinoline, preferably at least ten to one. The preferred dibasic acid is azelaic acid. A card impregnating solution is made by heating the solvent gently with stirring to dissolve ingredients while maintaining a maximum temperature of 45° until the azelaic acid is dissolved, then removing the heat and adding the finely divided silica, such as Cab-O-Sil, if desired.

A suitable example of practice follows:

EXAMPLE 2

MATERIAL	AMOUNT
Denatured Alcohol	1540 MI
Propyl Gallate	240 grams
8-Hydroxy-Quinoline	15.75 grams
Azelate Acid	60 grams
Cab-O-Sil M5	7.5 grams

1 The noseprint cards are coated with this solution or
2 preferably imprinted by means of the water fountain of an offset
3 press on a basis of 0.01 to 10 pounds of impregnating solution
4 for 3,000 square feet of cards. It has been determined that for
5 normal cards and good imaging, the coating basis can generally
6 be 0.5 to 1.0 pounds per 3,000 square feet of cards.

7 Noseprint of a dog's nose can be made by the procedure
8 illustrated in Figures 6(a) through 6(f).

9 Layout the necessary supplies before beginning to noseprint
10 your dog. One person can easily perform the procedure but if
11 two people are available that would make the process easier.

12 Hold the dog's muzzle 90 firmly and wipe and dry the dog's
13 nose with a towel 92 (Fig. 6(b)) of any absorbent material in
14 order to eliminate excess moisture.

15 Once dry, apply the Pad Towlette applicator 94 to the nose
16 holding the muzzle 90 closed to prevent the dog from licking the
17 noseprint solution off with their tongue. It is important not
18 to apply too much solution which is not needed and can smudge
19 the nose impression.

20 In one quick motion, press the supplied practice strip 94
21 lightly and squarely against the nose. It is not necessary to
22 press hard. Only a light touch of strip 94 to the nose to
23 obtain a clear print is needed. Quickly pull the paper straight
24 away from the nose. The paper should not be slid away from the
25 nose because this can smudge the noseprint.

1 The noseprint should be clear. If it is smudged, it was
2 pressed against the nose too hard. The chemistry of the
3 solution will develop the noseprint, not the amount of pressure.

4 Once the method has been practiced, the System is applied
5 using the Registry paper such as a 5-10 mil thick flat or semi-
6 gloss sheet of paper or a 5-15 mil thick card stock impregnated
7 with polyhydroxy aromatic developer.

8 A clear noseprint 86, as shown in Figure 7, is now ready to
9 be registered, and is identifiable from other dogs of the same
10 breed.

11 The card and packet weigh less than two ounces and can be
12 mailed at minimum cost. The noseprinting system of the
13 invention is low-cost, fast, convenient and yields excellent
14 prints in a clean, simple method administered by the dog owner.

15 A further aspect of the invention is illustrated in Figures
16 3 and 12. A plastic badge 50 containing the noseprint 54,
17 photograph 52, and other identifying information such as name 58
18 and ID number 56 can be scanned, digitized and printed on the
19 front face of a dog nose ID badge ID card 50 by a software
20 program, computer scanner and printer. The rear face of the
21 card 50 as shown in Figure 12 can contain fields describing the
22 dog by coat color 51, eye color 53, breed 55, weight 57, sex 58
23 and registered owner, address and telephone number 59.

24 Episuite Professional Software by G & A Imaging Ltd. can be
25 utilized to create a pre-configured database and special

1 manipulation of software to create ID card and dog collar tags.

2 The process of creating the animal badge consists of
3 entering the animal's biometric noseprint ID and other
4 information such as the name, the breed and description of the
5 animal into a pre-configured database, capture a 24 bit JPEG
6 color photograph of the animal, and capture the animal's
7 noseprint using a capturing device capable of producing easily
8 identifiable biometric images. The captured information is then
9 printed using a PVC card printer onto a durable CR-80 media. To
10 ensure quality, the noseprint is printed using pure black
11 generated from the printer's carbon print ribbon patch or an ink
12 jet or laser printer.

13 A flow diagram of the overall system is illustrated in
14 Figures 9(a) and 9(b). The operation of the retrieval system
15 after the data and noseprint identifying the dog are entered
16 into database are shown in the flow diagrams of Figures 9
17 through 11. The pet identification system shown in the flow
18 diagram of Figures 9(a) and 9(b) starts with pet registration
19 100 which checks whether this is a new or existing account 102.
20 If an existing account, the system will get account information
21 104, assign an account number 106, and then start the
22 registration processing at 108. If it is not a new account, it
23 will get account number 110, get the information of the owner
24 and dog, including noseprint 112.

25 The next step in the process is to acquire or capture a

1 noseprint 114 either using the inkless or inking systems
2 previously described or using a closeup camera such as a
3 Polaroid Micro 5 SRL with 3X or 5X magnification with 60 second
4 development of photograph.

5 The system then checks 116 whether this is the first dog
6 for the account. If it is, the counter for establishing
7 identification is set to "zero" 118. By this account, it means
8 the particular pet shop or store 12 (Fig. 1) that are registered
9 and assigned an account number. They are registered and
10 assigned an account number and the apparatus for obtaining
11 noseprint is delivered to the pet shop or store. If this is not
12 the first dog for the account entered at the pet shop, a "1" is
13 added to counter 120 to establish another identification number.
14 Successive numbers are added to the account number to provide a
15 unique identification number for each dog registered. If this
16 is the first dog or pet for the pet shop or store account, the
17 counter is set to "zero" 118 and the program emits a character
18 122, preferably a letter or letters to designate an account.
19 After an ID number has been generated by setting the count to
20 "zero" and then begin counting an ID number 124 is assigned to a
21 dog. The program then includes writing the ID number of the dog
22 on the back of the photograph 126 taken and scanning the
23 noseprint into the system 128.

24 The next step is the transmission of the information to the
25 central headquarters 114 (Fig. 1). The system permits sending

1 data by E-Mail 130 by transmitting the data, photograph, and
2 noseprint to the central headquarters or if not sent by E-Mail,
3 prints and delivers the data and photograph 134 to the dog
4 owner. The owner 10 then sends the data and photograph 136 to
5 central headquarters 14. If transmitted by E-Mail 138, the
6 information is downloaded 140 and appended 142 to the noseprint
7 and identification database. If delivered to the owner by
8 printing 134, it is then sent to the central office 136 where it
9 is received 138 and manually or electronically entered 140. The
10 system checks for duplicates at 144 or 146 which are deleted
11 145.

12 An ID card and collar tag are then created using a (video
13 imaging) program. A photo processing program such as Polaroid
14 Photomax can be used to enhance the photograph and noseprint
15 before printing the identification card and collar tag for
16 delivery to the pet owner 10. The system includes sending the
17 ID card, collar tag, and a lost dog form 150 to the owner after
18 being created at central office 14.

19 The steps involved when a dog strays or is lost is
20 illustrated in the flow diagram of Figure 10. Pet owner 10
21 (Fig. 1) prepares and submits lost dog form 152 to report a dog
22 lost 151 to the central office 14. If the dog ID is complete
23 154, a search through the database for the dog ID number 156 is
24 made. If the dog ID number is not complete, a search of the
25 database for the names of the dog and owner 155 is made. The

1 system program produces lost dog notices 158 which are
2 preferably transmitted 159 by facsimile to pet shelters,
3 veterinarians, pet shops and stores.

4 If a dog is discovered at veterinarian, shelter, or pet
5 shop in the area, the system proceeds as shown in the flow
6 diagram of Figure 11. If the pet has a collar tag 160, the
7 system will locate the owner 162 by the ID number on the tag and
8 the owner will be notified 164. If the dog found has no collar
9 tag, a description of the dog will be obtained 166 and an
10 attempt will be made to locate the dog in the noseprint database
11 168. If the dog is located in the database 170, the owner is
12 notified 164. If the dog is not located in the database, the
13 system waits for the owner to submit a lost dog form 172.

14 A flow diagram for identifying a dog claimed by an alleged
15 owner is illustrated in Figure 12. If the owner has an ID card
16 174, a noseprint of the dog is obtained 176 and compared with
17 photographs and noseprints in central headquarters database 178.
18 Various programs are available allowing noseprints to be
19 compared using a technique of pattern recognition to identify
20 the particular dog in the database and the rightful owner. If
21 the pattern recognition comparison results in a match 180, the
22 owner is notified of a positive match 182. If they do not
23 match, the owner is notified there is no match 184 and the
24 system waits for the next find 186.

25 The system disclosed in the flow diagram of Figure 12 can

1 also be used to certify dogs entered into a dog show. If there
2 is some question about the pedigree or ownership of a dog being
3 shown in a dog show, the system can identify the dog by using
4 the pattern recognition comparison technique to identify the dog
5 and certify that dog for officials of the show if on our
6 database.

7 The system in addition to producing the identification card
8 50 of Figures 3 and 13 can also produce a collar tag 190 (Fig.
9 14) for attachment to a dog's collar. The collar will include a
10 laminated photograph 192 of the dog, a copy of the noseprint
11 194, the identification number 196 of the dog, and indicate a
12 telephone number for the finder to call should a lost dog be
13 recovered. The caller can then give the identification number
14 on the tag to the central headquarters 14 and the owner can be
15 located as shown in the flow diagram of Figure 10. If a lost or
16 stray dog does not have a collar tag, a noseprint can be
17 obtained by any of the methods disclosed and sent to central
18 headquarters. If the dog's noseprint is in the database, the
19 owner can be identified and reunited with his dog.

20 Thus there has been disclosed a unique system for
21 identifying pets and more particularly dogs, for recovering lost
22 dogs, and maintaining a database to identify dogs. The system
23 includes several methods for acquiring an accurate and in-focus
24 noseprint of a dog which is unique to each animal. Noseprints
25 of pets provide unique identification and are a practical,

1 proven, reliable method. Finding 12 to 25 points of identical
2 characteristics in a pair of noseprints is generally considered
3 sufficient proof that both prints were taken from the same dog.
4 Good noseprints taken from a dog have proven reliable for
5 identification purposes.

6 The system and method can use an inking or inkless method
7 to obtain a noseprint or a closeup, in-focus photograph of a
8 nose using a closeup camera. The noseprint, a photograph, and
9 data identifying a dog as well as the dog owner are then entered
10 into a central headquarters database and identification number
11 assigned to the dog including an account number for the location
12 where the account was generated. The system can then be used to
13 locate a lost dog either by the identification number or by
14 using a pattern recognition system to compare noseprints.

15 This invention is not to be limited by the embodiment shown
16 in the drawings and described in the description which is given
17 by way of example and not of limitation, but only in accordance
18 with the scope of the appended claims.
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